Exploring the Impact of Nature-Connected Art Therapy on the Positive and Negative Affect in Children

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DATE: March 27, 2024

TO: Nicolette Pilla
FROM: Albertus Magnus College Institutional Review Board
PROJECT TITLE: Exploring the Impact of Nature-Connected Art Therapy on Affect in Children.
IRB ID Number: 202324-030

SUBMISSION TYPE: Revised
DECISION: Approved
ACTION: COMPLETE

Dear Nicolette Pilla:
The Albertus Magnus College Institutional Review Board (AMCIRB) by Expedited Review has considered the Revised submission for the project referenced above. Following this review, the AMCIRB has **Approved** this study, from 3/27/2024 to 3/27/2025.

Research activities (including screening, new recruitment, follow-up, and continued participation of enrolled participants) that have been approved may not be conducted beyond the expiration date stated above unless a continuation/renewal is requested and approved by the IRB.

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This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Albertus Magnus College Institutional Review Board's records.

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Abstract

Stress and anxiety have profound impact on various aspects of child development which underscores the urgency for both early identification and intervention (CDC, 2023). Nature exposure benefits children and enhances well-being and cognitive abilities (Bashan et al., 2023; Moore, 1986; Wells & Evans, 2003). By merging the mental health treatment modality of art therapy with immersion in or exposure to nature, nature-connected art therapy emerges as a promising approach to treating children. The present study investigates the effects of using natural materials in art therapy to enhance positive affect and reduce negative affect in children.

Exploring the Impact of Nature-Connected Art Therapy on the Positive and Negative Affect in Children

With growing concerns surrounding children's anxiety and stress, nature-connected art therapy may be a useful clinical intervention. To research the effectiveness of nature-based art therapy, one must first have knowledge of child development, the role of art therapy, and the profound connection between children and nature.

Child Development

The study of child development encompasses various physical, cognitive, emotional, and social changes, reflecting the multidimensional nature of this field. Over time, perspectives on child development have become increasingly sophisticated, drawing insights from a diverse array of disciplines including psychology, biology, sociology, and education. From early philosophical and religious views to the emergence of psychological theories in the 20th century, the understanding of child development has evolved significantly (Bornstein, 2013). This interdisciplinary approach has enriched our comprehension of the complex processes involved in children's growth and development.

Sigmund Freud's psychoanalytic theory, introduced in the early 20th century, laid the groundwork for understanding the influence of the unconscious mind and its impact on behavior (Freud, 1905). Freud emphasized the significance of early experiences and unconscious desires in shaping an individual's personality. His pioneering work paved the way for subsequent developmental theorists to expand upon his ideas. Melanie Klein, one such theorist, built upon Freud's foundation by highlighting the importance of early relationships, unconscious fantasies, and the mother-child relationship in shaping a child's psyche (Klein, 1932). Moreover, prominent developmental theories proposed by Freud (1905), Erikson (1968), and Piaget (1966) offer comprehensive insights into childhood development. Freud's emphasis on childhood experiences and unconscious desires, Erikson's categorization of life challenges and their outcomes in his psychosocial theory, and Piaget's focus on distinct cognitive processes all contribute to our understanding of how individuals develop from childhood into adulthood (Freud, 1905; Erikson, 1968; Piaget, 1966). Together, these theories provide a multifaceted perspective on the intricate processes that shape human development.

Attachment and object relations theorists, including Winnicott (1953), Bowlby (1969), Ainsworth (1978), and Mahler (1975), contributed significantly in understanding child development. Winnicott (1953), emphasized the role of the "good enough mother" in providing a positive environment for the infant's emotional needs. Bowlby's (1969), attachment theory stresses secure attachments' pivotal role in a child's social and emotional development, which would influence future relationships and mental health outcomes. Ainsworth's (1978), work on attachment patterns, particularly the "strange situation" experiment, highlighted the caregiver's responsiveness in forming secure attachments. Mahler (1975) focused on the process of separation and individuation, how children grow up and figure out who they are and learn about themselves.

Understanding child development one needs to recognize the intricate interplay between genetics and environmental influences. This acknowledgment underscores the significance of both biological predispositions and environmental contexts in shaping children's growth and behavior (Bornstein, 2013). It emphasizes the need to consider both biological predispositions and environmental contexts in crafting interventions and support systems that promote holistic growth and well-being for children.

To promote healthy childhood development, assessing, diagnosing, and providing mental health treatment to this population requires an effective, age-appropriate modality. Therefore, art therapy provides nurturing environments that facilitate children's growth and their connection to the world, including nature (Boon, 2019; Bornstein, 2013). This modality aligns with key objectives outlined in developmental theories, and the critical role of environments supporting optimal childhood growth. Rooting interventions in a solid foundation of child development theory provides opportunities to build interventions and systems that nurture a child’s growth, well-being, and ability to overcome adverse experiences.

Impacts of Negative Affect on Child Development

The influence of negative affect, such as stress and anxiety, on a child's cognitive, emotional, social, and physical well-being. It seems clear that it can have lifelong effects. Early identification and intervention are crucial, as negative affect can impair cognitive development, making it difficult to learn and retain information, leading to academic problems or attention difficulties (CDC, 2023). The ability to regulate emotions is also impacted, making it more difficult to cope with sadness, anger, or outbursts, and difficulty developing healthy coping skills. Therefore, social development is impacted, as children with negative affect may become withdrawn or isolated, leading to loneliness, bullying, or other issues. In addition, chronic stress and anxiety have also been linked to a weakened immune system and chronic health problems later in life (CDC, 2023). Understanding the impact of positive and negative affect on child development can help children developing coping skills and strategies to manage these emotions in a healthy way.

Left untreated, these mental health conditions may persist into adulthood, affecting individuals' ability to function in society and contributing to broader social issues such as unemployment, and substance abuse, and exacerbating existing issues or leading to the development of further mental health problems. Therefore, addressing a child’s negative affect in early childhood is not only crucial for individual well-being but also for the overall health and stability of society (Woodward & Fergusson, 2001).

Benefits of Nature on Development

Immersing children in nature not only enhances cognitive abilities but also reduces negative affect, stress, and anxiety levels (Bashan et al., 2023; Moore, 1986; Wells & Evans, 2003). Moore (1986) highlights children's inclination towards natural settings, showing that 96% of urban children depicted natural spaces in their drawings. Unfortunately, children's access to natural spaces has been increasingly reduced over the years due to urbanization (Summers et al., 2019). Similarly, Bashan et al.'s (2023) research revealed that urban dwellers had lower species identification skills and weaker emotional connections with nature compared to rural residents. These findings emphasize the importance of accessible green spaces, nature education, and outdoor activities to rejuvenate the connection between individuals and the natural world (Bashan et al., 2021; Moore, 1986; Summers et al., 2019).

Separation between "indoor learning" and "outdoor play" in our education system limits a child's growth (Boon, 2019). Blending learning and play, utilizing outdoor spaces, can ignite curiosity and problem-solving skills. It would encourage imagination and reflection fosters innovation and emotional intelligence. Integrating learning and play empowers children to develop intellectually and emotionally, enhancing their educational journey (Pike, 2021; Sweeney, 2013). Schools where primary education takes place outdoors are often referred to as "Outdoor Schools" or "Forest Schools" (Boon, 2019). These educational settings prioritize outdoor activities, nature exploration, and hands-on learning experiences in natural environments. Emphasizing experiential learning in nature, these schools are adamant about keeping children outdoors as they recognize the numerous benefits of direct interaction in a natural setting for children's physical, emotional, and cognitive development (Boon, 2019; Pike, 2021; Sweeney, 2013; Summers et al., 2019).

Proximity to nature has shown positive effects on children's well-being, reducing psychological distress, and enhancing self-worth (Wells & Evans, 2003; Summers et al., 2019). Children residing close to natural surroundings even rated their self-esteem higher compared to those living in areas with less nature around them (Wells & Evans, 2003). Capaldi et al.'s (2014) meta-analysis further emphasized that a deeper connection to nature correlated positively with happiness, suggesting that fostering this connection could enhance overall well-being. Furthermore, Norton and Watt's (2014) wilderness-based program for urban youth demonstrated improvements in different aspects of development such as social skills, resilience, and personal growth. These programs provide opportunities for positive experiences, supportive relationships, and personal growth in challenging yet nurturing environments (Norton & Watt, 2014). Engaging in outdoor play and activities helps children understand the world's adaptability and recognize the influence their actions can have on it (Summers et al., 2019).

Long-term exposure to nature in childhood positively influences adult involvement in similar pursuits (Asha, 2011). Therefore, early exposure to nature, perhaps by integrating nature-based activities in communities and schools, can encourage children's continued engagement with the natural world and help reduce stress (Asah et al., 2014; Norton & Watt, 2014; Summers et al., 2019). Even briefly viewing images of nature or green landscapes has been shown to enhance one's mood (Summers et al., 2019). Encouraging outdoor activities, providing nature-based programs, and fostering a deeper connection to nature not only nurture children's physical, mental, and emotional health but also promote their overall happiness. Building a strong bond between children and the natural world can also teach them to care about the environment (Asah et al., 2011; Bashan et al., 2023; Moore, 1986; Norton & Watt, 2014; Summers et al., 2019; Wells & Evans, 2003).

Benefits of Art Therapy with Children

Art therapy is a multifaceted treatment modality, presenting substantial benefits for children's emotional, psychological, and developmental well-being (Cohen-Yatziv & Regev, 2019). It utilizes the expressive power of art to facilitate communication, enabling children to articulate complex emotions and experiences that might be challenging to express verbally (Cohen-Yatziv & Regev, 2019; Malchiodi, 2012). Through art, therapists gain unique insights of the inner world of children, tailoring interventions to suit their individual needs (Durkin et al., 1989; Malchiodi, 2012). Studies consistently underscore art therapy's positive influence on a child's self-concept and emotional regulation. Engaging in artistic activities fosters a sense of accomplishment, contributing to heightened self-esteem and confidence, while reducing stress and anxiety (Cohen-Yatziv & Regev, 2019; Riley, 2001). A systematic review about the benefits of Art Therapy by Cohen-Yatziv and Regev (2019), showed how art therapy had positive significant outcomes in children with trauma, medical conditions, juvenile offenders, in special education, and with disabilities.

Art therapy encourages the development of adaptive coping mechanisms and problem-solving skills in children. Through creative exploration, children learn to navigate challenges, fostering resilience and adaptability (Malchiodi, 2012). It also plays a pivotal role in trauma recovery and serves as a conduit for children to externalize and reframe traumatic experiences, promoting healing and resilience (Malchiodi, 2012; Riley, 2001). In addition, this therapeutic approach extends its impact on cognitive development. Studies have shown a positive association between engaging in art therapy and improvements in cognitive abilities (Cohen-Yatziv & Regev, 2019; Kaimal et al., 2017). Creative expression stimulates critical thinking and cognitive functioning in children, emphasizing the holistic nature of art therapy's benefits.

Developmental Art Therapy

While developmental theories offer a comprehensive understanding of how children grow and develop, these theories are put into action when used in art therapy treatment (Malchiodi, 2012; Riley, 2001). Developmental Art therapy highlights the importance of creativity and play in child development and how art therapy can be used to help children express emotions, develop coping skills, process challenges, and promote cognitive, social, and emotional growth (Rubin, 2016; Malchiodi, 2012). It is a holistic approach that considers each person's unique developmental journey and tailors the therapy to one’s specific stage of development (Aach-Feldman et al., 2016). Like other developmentally focused clinicians, developmental art therapists draw on a variety of theoretical perspectives, including psychosexual (Freud, 1905), psychosocial (Erikson, 1968), cognitive growth (Piaget et al., 1966), attachment style (Bowlby, 1969), and typical development in art (Rubin, 2016). This therapeutic approach, which is designed to help clients express themselves creatively, explore emotions and thoughts, develop coping mechanisms, build self-confidence, and promote healing and growth (Rubin, 2016).

Developmental art therapy can be used to address a wide range of issues, including anxiety, depression, trauma, grief, disability, developmental delays, learning disabilities, behavioral problems, relationship conflicts, and family discord (Aach-Feldman et al., 2016). It provides a safe and supportive environment where clients can freely express themselves and work through their challenges. Power et al.'s (2023) in a recent systematic review revealed how art therapy has changed individuals with learning disabilities and mental distress in the last forty years. Even without direct input, it showed how therapists adapt to complex needs. Demonstrating why methods like developmental art therapy are crucial for creating better treatments for children's mental health issues.

Therapeutic Benefits of Nature-Connected Art Therapy

Spending time in nature offers an array of benefits for children, ranging from physical and mental health improvements to stress reduction and increased creativity (Asah et al., 2011; Capaldi et al., 2014; Kang et al., 2021; Moore, 1986; Norton & Watt, 2014; Wells & Evans, 2003). Art therapy can serve as a valuable means of helping children forge a connection with the natural world. For instance, art therapists often guide children in engaging activities such as nature journaling and creating art using materials found in nature (Pike, 2021; Sweeney, 2013). This synergy between art therapy and nature helps children reap the rewards of both therapeutic approaches (Pike, 2021; Sweeney, 2013).

Eco-therapy and nature art therapy take these benefits to the next level by providing a structured and intentional way to experience nature (Pike, 2021; Sweeney, 2013). Eco-art therapy combines art therapy with ecopsychology, the study of the relationship between humans and the natural world (Pike, 2021; Sweeney, 2013). This therapeutic approach invigorates the senses, facilitates emotional expression, and promotes self-awareness and connection to nature (Pike, 2021). By creating art with or in nature, clients can contemplate their connection to the world around them and cultivate synergy between environmental and personal well-being (Pike, 2021). Eco-art therapy uses art and nature to mediate the exchange of information between the repressed areas of the psyche and conscious awareness (Sweeney, 2013). It is a holistic approach that helps people connect with their deeper selves and the natural world through art. This can be accomplished in a variety of ways, such as creating art with natural materials, spending time in nature while creating art, or reflecting on the natural world through art (Sweeney, 2013).

Boon (2019) suggests using nature as a co-therapist in art therapy. Incorporating nature into art therapy allows one to explore existential themes such as life, death, change, renewal, loss, and new beginnings (Boon, 2019). Nature emerges as an invaluable teacher and guardian, especially for children who lack adequate nurturing environments. Engaging with nature presents children with a world far beyond their immediate scope, fostering a space to contemplate vast concepts and experience the wonders of natural elements and cycles. In today's technology-driven society, where distractions abound, nurturing a connection with nature holds exceptional significance. When integrated into art therapy, this relationship becomes more than a temporary therapeutic measure. It evolves into a lifelong connection that shapes how individuals relate to themselves, others, and the world. Grounded in shared sensory, emotional, and imaginative experiences, this bond with nature remains beneficial long after the therapy concludes (Boon, 2019).

Insight into the powerful, transformative connection between art and nature can be seen through the work of artists such as the sculptor, and environmentalist Andy Goldsworthy. The artist Goldsworthy's deep connection with the natural world and his use of materials like leaves, sticks, and stones in his site-specific works resonate harmoniously with the core principles of art therapy. His approach stands out from other artists because of his commitment to allowing the creative process to be guided by the inherent qualities of natural materials, embracing our interconnectedness with the world around us (Malpas, 2018). Goldsworthy's art is inherently impermanent, often vanishing over time as the elements and time take their course. This transience becomes a meaningful metaphor for art therapy clients. In accepting the impermanence of emotions and life experiences, instilling the understanding that difficult moments are not permanent, and change is a constant in our lives.

Goldsworthy's nature-oriented approach prioritizes the journey of creating art over the final product, encouraging clients to immerse themselves fully in the present moment. By appreciating the process of creating art, clients can derive therapeutic benefits and find joy in the act of artistic expression itself (Malpas, 2018). This approach resonates with the heart of art therapy, where the act of creation is as valuable as, if not more so, the final artwork.

In a study led by Kang et al. (2021), nature-based art therapy's impact on siblings of children with disabilities was explored. Levels of stress, self-esteem, and brain activity were measured before and after outdoor art therapy sessions. The findings revealed decreased stress, boosted self-esteem, and improved cognitive and emotional brain functions in the art therapy group. This suggests the potential of nature-immersed art therapy to support children's well-being, aligning with the concept of eco-art therapy. It blends nature and art to nurture emotional resilience and a deeper connection with oneself and nature (Pike, 2021; Sweeney, 2013).

Nature-connected art therapy is a promising therapeutic approach that combines the benefits of art therapy with the restorative power of nature (Asah et al., 2011; Bashan et al., 2023; Capaldi et al., 2014; Moore, 1986; Norton & Watt, 2014; Pike, 2021; Wells & Evans, 2003). It can support children's development in all areas, including cognitive, emotional, social, and physical. Research has shown that nature-connected can be effective in reducing negative affect, stress and anxiety (Liu et al., 2023; Moula, 2020), enhancing self-esteem and self-acceptance (Liu et al., 2023), improving emotional regulation (Moula, 2020), boosting creativity and problem-solving skills (Moula, 2020), promoting resilience and well-being (Asah et al., 2011; Bashan et al., 2023; Capaldi et al., 2014; Moore, 1986; Norton & Watt, 2014; Wells & Evans, 2003), and facilitating healing from trauma (Malchiodi, 2012).

This study aimed to investigate if nature-connected art therapy using natural materials would significantly enhance positive affect and reduce negative affect in children. It was hypothesized that the experimental group working with natural materials would experience a significant increase in positive affect and a significant decrease in negative affect compared to the control group.

Method

Participants

There were 30 participants involved in this study. The participants in this study consisted of children aged 13 to 17 years old. The recruitment strategy for this study primarily involved a snowball method to invite participants. Consent was obtained from parents, and assent was obtained from the participants themselves. There were no exclusionary criteria other than the specified age range. Additionally, an informative flyer was distributed through various social media, providing details about the study and how to become a participant (see Appendix A). Upon recruitment, participants were randomly assigned to either an experimental or control group to ensure unbiased group allocation. To maintain confidentiality, any identifying information of participants was handled following secure data storage as per IRB guidelines.

Instruments

Participants completed an initial demographic survey to gather information about their age, gender identity, race, ethnicity, grade, geographic location, and nature connectedness.

Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) is a popular scale for evaluating emotional states before and after interventions. With 20 items split into Positive Affect (PA) and Negative Affect (NA) scales, it is a self-report measure of emotions. Each scale consists of 10 items. Positive affect assesses positive feelings like enthusiasm and alertness, while NA scale measures distress and unpleasant emotions such as anxiety and stress. Participants rate items on a 5-point Likert-type scale (1 to 5), with higher scores indicating a stronger affect. PA scores are calculated from items 1, 3, 5, 9, 10, 12, 14, 16, and 17 (range: 10-50), while NA scores are derived from items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20 (also 10-50). Higher PA scores signify greater positivity, while lower NA scores indicate lower negativity.

The PANAS allows for measuring affect over various timeframes, from the present moment to the past year, with demonstrated stability (Watson et al., 1988). Internal consistency, evaluated using Cronbach's alpha, showed high reliability for both PA (.86-.90) and NA (.84-.87). The scales had low intercorrelation (-.12 to -.23), indicating they measure distinct emotional constructs. Test-retest reliability over 8 weeks showed consistency, with coefficients ranging from .47 to .68 for PA and .39 to .71 for NA. Stability increased with longer time frames, underscoring the PANAS's reliability in measuring momentary emotional states.

Materials

Materials included for the experimental group’s art experiential were various leaves, flowers, sticks, small stones, Elmer's Glue™, ModgePodge™, 8x8 canvas board, and brushes.

Procedure

The procedure involved both the child and their parent providing informed consent and assent (see Appendix C & D). Participants and parents also completed a demographic questionnaire to provide background information (see Appendix E). Each participating child completed a self-report questionnaire, the Positive and Negative Affect Schedule (see Appendix G), to establish a baseline for positive and negative affect levels. Participants were randomly assigned to either the control or experimental group using random generator software to ensure unbiased group allocation. In the experimental group, participants participated individually or in small groups. Locations were at a public library or the participant's house, and materials came from local parks, beaches, and preserved natural materials. For the experimental group, instructions were read to the participant from a script asking them to create art with nature-based materials. No further guidelines were offered. For the control group, instructions were read to the children from a script (see Appendix F), directing them to engage in an activity involving passively viewing images of nature. Participants had approximately 20-25 minutes to create their artwork. Following the intervention, all participants, regardless of group assignment, completed the Positive and Negative Affect Schedule a second time, to determine any changes in positive and negative affect. After completing the assessments, both the participating child and their parent participated in a debriefing session (see Appendix H). The purpose of the study was explained, questions or concerns were addressed, and participants were thanked.

Results

Descriptive Statistics

In total, 30 participants partook in this study, with 16 assigned to the experimental group and 14 to the control group. Demographic analysis revealed a predominantly female (61.54%; *N*= 19) sample, with a majority residing in suburban regions (80%; *N*= 22). The mean age of participants was approximately 14.54(*SD*=1.33), and the average grade level of participants was approximately 8.97*(SD*= .77). Concerning outdoor engagement, a significant proportion reported spending time outside occasionally (33.33%; *N*=10) or sometimes (33.33%; *N*=10), with playing with friends emerging as the most favored outdoor activity (43.33%; *N*=14), followed by being active in sports (33.33%; *N*=10). In contrast, only a minority expressed interest in less common outdoor activities like hiking or going to the park (3.33% each; *N*=1). During the demographic questionnaire, participants were asked about their frequency of spending time with their families outdoors / in nature. The majority reported rarely (33.3%; *N*= 10) or once a week (33.3%; *N*= 10), highlighting limited family time outside. Surprisingly, only one participant (3.3%; *N*=1) reported spending every day outside with their family, underscoring the rarity of such experiences and suggesting the importance of disconnecting from technology and screens. Additionally, participants were asked about their interest in spending more time in nature. An overwhelming 86.7% (*N*= 26) expressed a desire to do so, indicating a strong inclination towards outdoor activities and the allure of natural environments.

Inferential Statistics

Paired-sample t-tests were conducted to compare the change in scores on positive and negative affect from pre- to post-intervention for both the experimental group and the control group. For the experimental condition, there was found to be a significant increase in positive affect from pre (*M*= 33.31; *SD*= 7.07) to post (*M*= 40.38; *SD*= 6.59) intervention, *t*(15) =5.25, *p* < .001, with a Cohen's d of 1.31. Additionally, there was found to be a significant decrease in negative affect from pre (*M*= 13.38; *SD*=3.12) to post (*M*=11.89; *SD*=2.39) intervention for the experimental group, *t*(15) = -2.57, *p* < .02, with a Cohen's d of .56.

Similarly, in the control condition, there was found to be a significant increase in positive affect from pre (*M* = 27.21; *SD*= 7.27) to post (*M* = 31.14; *SD* =6.69) intervention, *t*(13)=4.6, *p* < .001, Cohen's d = 1.23, and a significant decrease in negative affect from pre (*M* = 13.79; *SD* = 3.11) to post (*M* =12.86; *SD* = 3.2) intervention, *t*(13)=-2.33, p< .02, Cohen's d = -.622.

Finally, an independent t-test was conducted to see if there was a difference between groups. A significant difference in the change in positive affect was found between the experimental (*M* = 7.06; *SD* = 5.38) and control group (*M*=3.93; *SD* = 3.20), *t*(28) = 1.90, *p* < .05, with a Cohen's d = .70. No significant difference was found in the change in negative affect between the experimental (*M* = -1.50; *SD* =2.66) and control groups (*M*=-.93; *SD* = 1.49), *t*(28) = -.711, Cohen's d = -.260.

Discussion

The goal of the present study was to assess the impact of nature-based art therapy on children's emotional well-being. Participants were divided into two groups: an experimental group engaged in creating art with natural materials, and a control group exposed to images of nature. Results indicated notable improvements in positive affect for both groups post-intervention. Specifically, the experimental group demonstrated significantly higher positive affect scores than the control group, highlighting the potential efficacy of nature-based art therapy in enhancing children's emotional health. Overall, while both groups experienced changes in their emotional states, the experimental group exhibited a more pronounced increase in positive affect as compared to the control group, indicating the potential benefits of incorporating nature-based elements into art therapy interventions for children.

The study’s findings were consistent with the existing literature on the therapeutic benefits of nature-connected art therapy for children. The literature review highlights the significant impact of negative affect, stress, and anxiety on child development, emphasizing the importance of effective interventions to support children's well-being (CDC, 2023).

Using nature-based art therapy as a clinical intervention aligns with previous research emphasizing the restorative power of nature and the potential of art therapy to facilitate emotional expression and healing (Boon, 2019; Cohen-Yatziv & Regev, 2019; Malchiodi, 2012). Combining elements of both nature and art therapy, the study examined the efficacy of a holistic approach to enhance positive affect and reduce negative affect in children. Results indicated that by incorporating natural materials into the therapeutic process, art therapists can provide an intervention that has the potential to support the emotional growth and resilience of pediatric clients. This study added to the present body of research on the therapeutic effects of exposure to nature, by lending support to the value of creating art with materials from nature. It provides empirical data to support the adages and observations that it is good for children to engage with nature.

In examining the art made by participants in this study, several themes and observations emerged, offering specific insight into the study's results. A prevalent trend among the collages was the representation of natural spaces and plants, which included gardens, pathways through nature, groves of trees, and bouquets of flowers. Interestingly, while some participants expressed discomfort with the use of glue during the art-making process, others embraced it and found joy in the tactile experience it provided. In fact, some individuals took their engagement with natural materials a step further by creating "natural" glitter through techniques, such as pressing dried petals between their fingertips. These diverse types of interactions with the materials highlight the subjective nature of artistic expression and underscore the importance of individual preferences and experiences in the therapeutic process. The unique artistic processes and the resulting products of the collages embody creative exploration facilitated by nature-connected art therapy, illustrating its potential to foster emotional well-being and artistic expression in children.

Figures 1 and 2 depict participants who experienced the most significant increase in positive affect and decrease in negative affect. Notably, they exhibited a deep appreciation for the natural materials provided, fully engaging with them during the art-making process. Conversely, Figures 3 and 4 showed less pronounced changes in affect, despite laying out their materials on the canvas board before gluing their collages down. Interestingly, Figures 3 and 4 did not create nature collages; instead, one participant crafted a cat, while the other depicted a person using natural materials.

One additional thing to note regarding the artmaking experience was that many participants expressed a desire for more time with the materials, highlighting their enjoyment of the accessibility and the potential for recreating similar experiences using materials they could find on their own, eliciting a strong desire for continued engagement and exploration.

The findings align with previous research highlighting the therapeutic benefits of nature-connected interventions and art therapy for children's emotional well-being. The combination of nature exposure and artistic expression in nature-connected art therapy likely contributed to the observed increase in positive affect. By using natural materials, children may have found a meaningful way to connect with their emotions and express themselves creatively. This process of creative expression may have also likely contributed to the increase in positive affect. Art therapy provides a creative outlet for self-expression and emotional processing. Incorporating natural materials and settings into therapy activities may have fostered a deeper connection to nature among participants. This sense of connection to the natural world could have contributed to a person's overall sense of well-being and positive emotions. The positive outcomes observed in the experimental group could be attributed to the synergistic effects of nature exposure, artistic expression, sensory engagement, self-expression, connection to nature, and inherent in nature-connected art therapy.

The results of nature-connected art therapy have significant clinical implications for children's mental health. This approach effectively promotes positive emotions like joy and contentment, while also reducing negative feelings like anxiety and fear. By providing a safe space for expression and exploration in a natural environment, nature-connected art therapy contributes to a child's overall emotional well-being. Furthermore, it aligns with a holistic approach to mental health by addressing not just emotional factors but also the environmental connection. Integrating nature into therapy fosters a connection to the natural world while nurturing a child's emotional needs. This can have a lasting impact on building resilience through increasing self-esteem, emotion regulation, and cognitive skills. By encouraging creative problem-solving and engagement with nature, nature-connected art therapy equips children to navigate challenges effectively. Ultimately, this approach serves as a preventive measure against stress, anxiety, and other mental health concerns by promoting a sense of connection to nature and fostering positive emotions, potentially mitigating the risk of developing disorders later in life.

It is also essential to recognize the profound significance of nature exposure for children's holistic development. Integrating outdoor activities and green spaces into educational settings and encouraging parents to spend time outdoors with their children not only fosters cognitive, emotional, and social growth but also promotes stress reduction and emotional well-being (Boon, 2019; Pike, 2021; Sweeney, 2013). By immersing children in nature, they have the opportunity to engage in experiential learning, develop problem-solving skills, and enhance their creativity (Summers et al., 2019). Moreover, nature-connected art therapy offers a unique avenue for children to express themselves creatively while deepening their connection with the natural world (Pike, 2021; Sweeney, 2013). Through activities such as nature journaling and art-making using natural materials, children can derive therapeutic benefits that extend beyond the confines of traditional therapy sessions (Asah et al., 2011).

Limitations and Future Research

The study's limitations include a small sample size of only 30 participants and a potential bias towards suburban areas due to the researcher's location, impacting the diversity of participants. To address these limitations, future researchers could expand recruitment efforts to include participants from a geographically diverse range of locations, thus enhancing the study's generalizability to those living in urban and rural areas as well as suburban. Additionally, conducting comparative studies with a third group using traditional art materials could provide further insights into the unique impact of nature-connected art therapy by comparing the impact of the natural materials versus more common collage materials increasing recruitment efforts to include more participants from broader social demographics would also enrich our understanding of its applicability and effectiveness in different populations.

Additionally, future research could expand on several fronts to deepen our understanding of nature-connected art therapy's efficacy and applicability. Firstly, conducting studies with a larger population size would provide more robust data and enhance the study's statistical power, offering greater confidence in the results. Moreover, ensuring diversity in participant demographics would allow for a more comprehensive exploration of how nature-connected art therapy impacts individuals from various cultural backgrounds and geographic environments. Exploring the potential impact of creating art outdoors in nature itself represents another avenue for investigation. This could involve comparing outcomes between sessions held indoors and those conducted outdoors, assessing whether the natural environment amplifies therapeutic benefits. Additionally, investigating the effect of participants gathering their own natural materials from nature and then using them in the art-making process could shed light on the significance of personal connection with the natural world coupled with increased autonomy in making choices. Overall, these avenues of future research promise to deepen our understanding of nature-connected art therapy and its potential to positively influence mental health outcomes in diverse populations of children experiencing the world around them and within.

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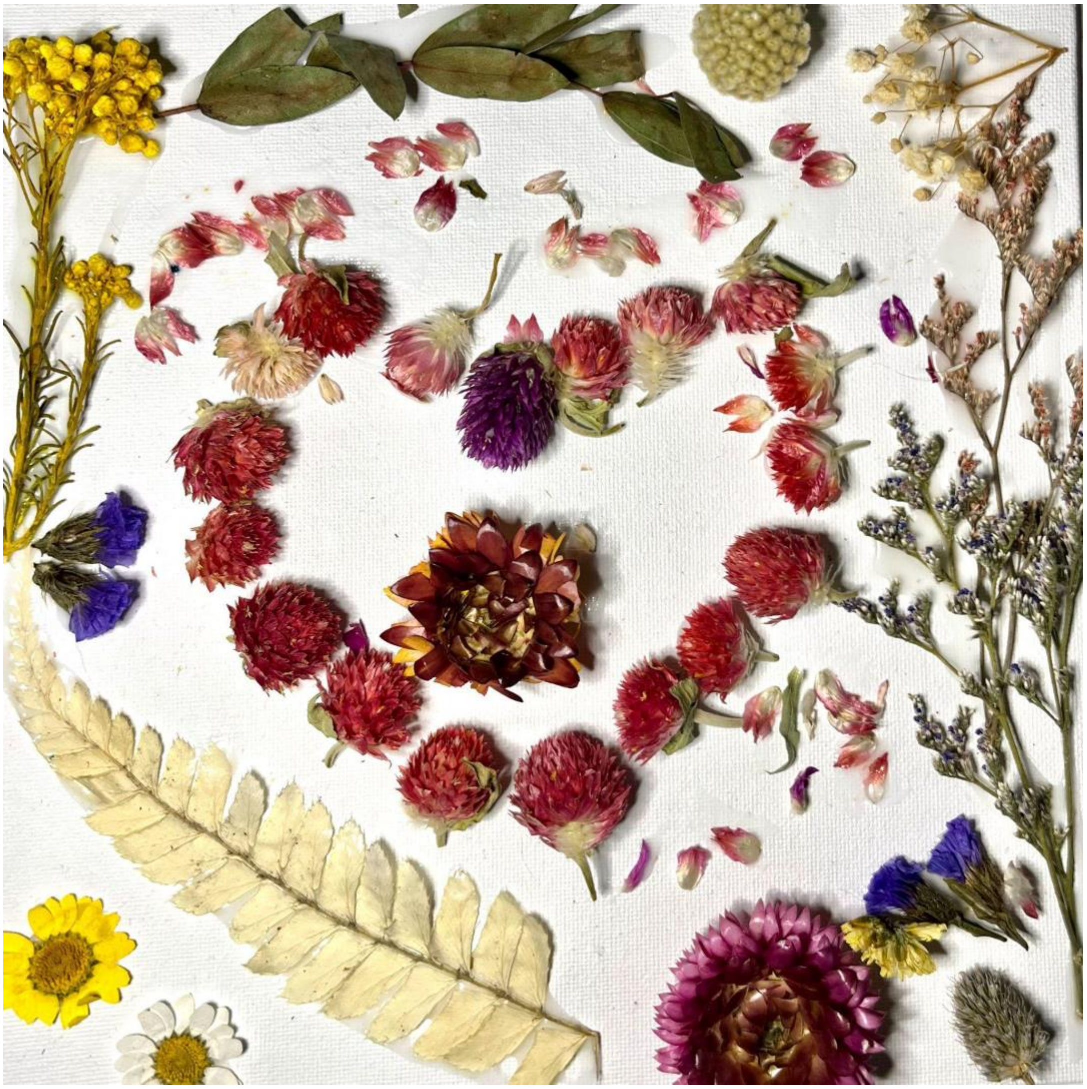
Figure 1

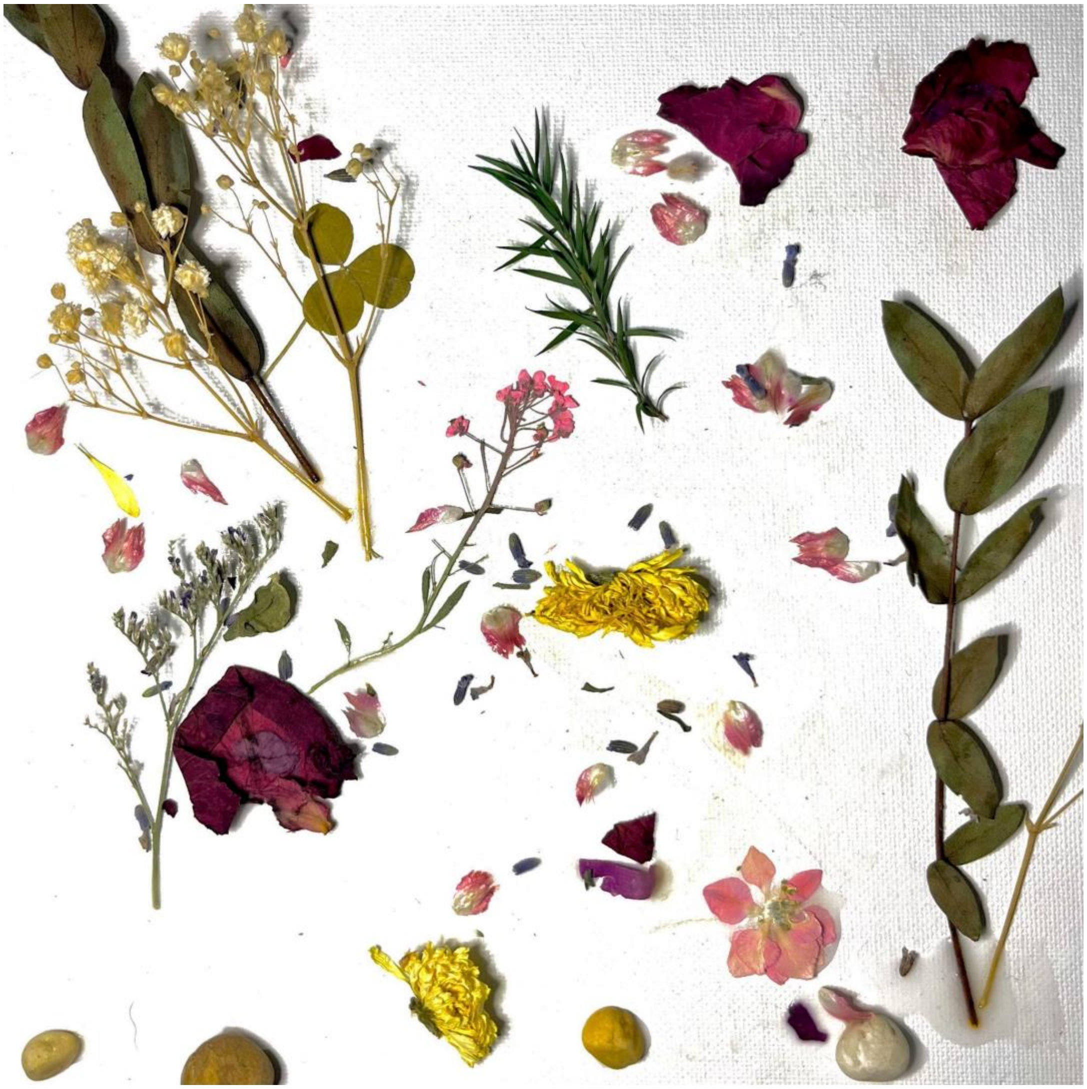
I Heart Nature



Note: Artwork by a 13-year-old Caucasian female. Positive Affect increased by 17 points (from 23 to 40). Negative Affect decreased by 1 point (from 12 to 11).

Figure 2

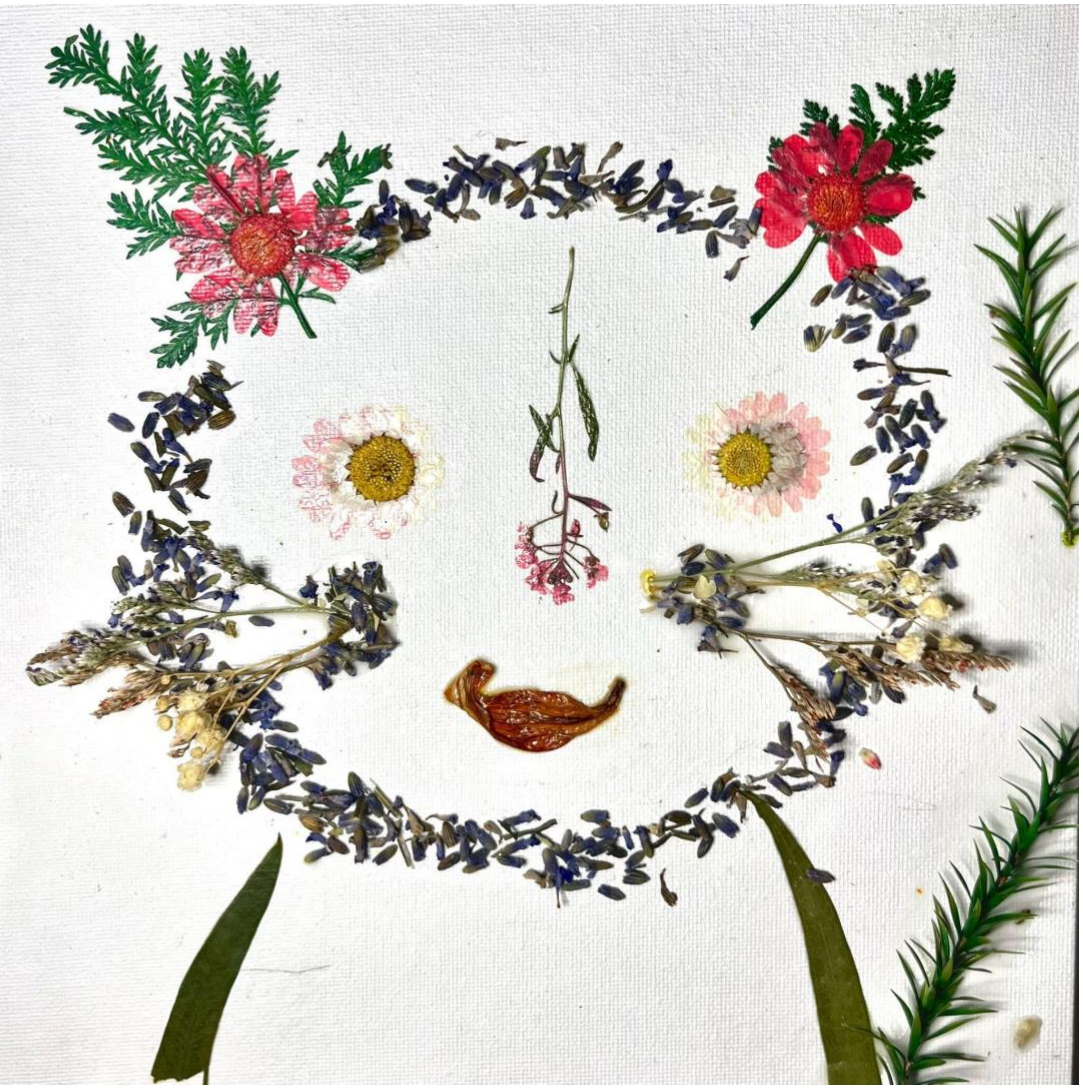
A Nature Walk



Note: Artwork by a 14-year-old Caucasian male. Positive Affect increased by 16 points (from 24 to 40). Negative Affect decreased by 8 points (from 19 to 11).

Figure 3

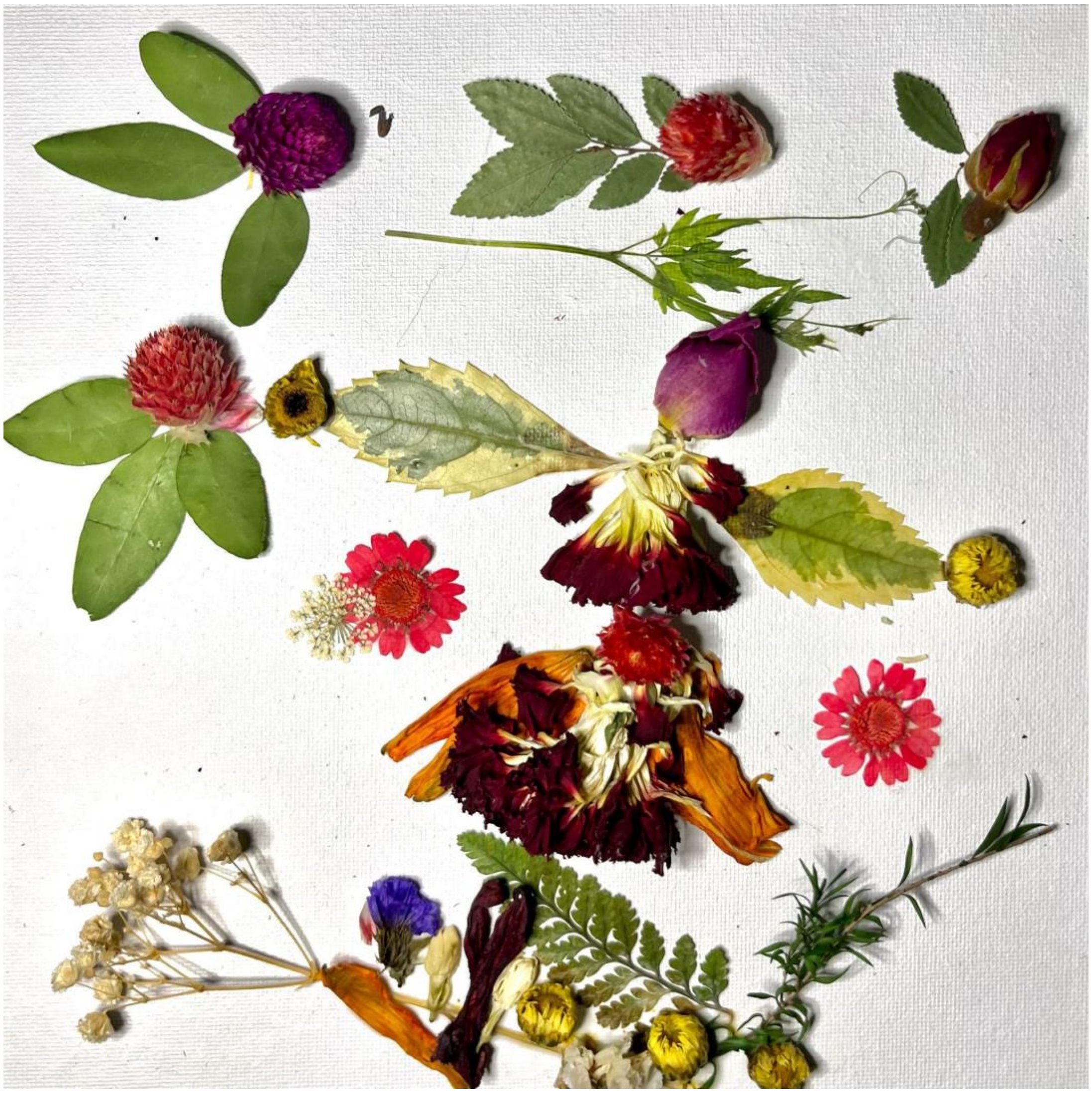
Flower Cat



Note: Artwork by a 15-year-old Asian female. Positive Affect increased by 2 points (from 39 to 41). Negative Affect decreased by 0 points (from 10 to 10).

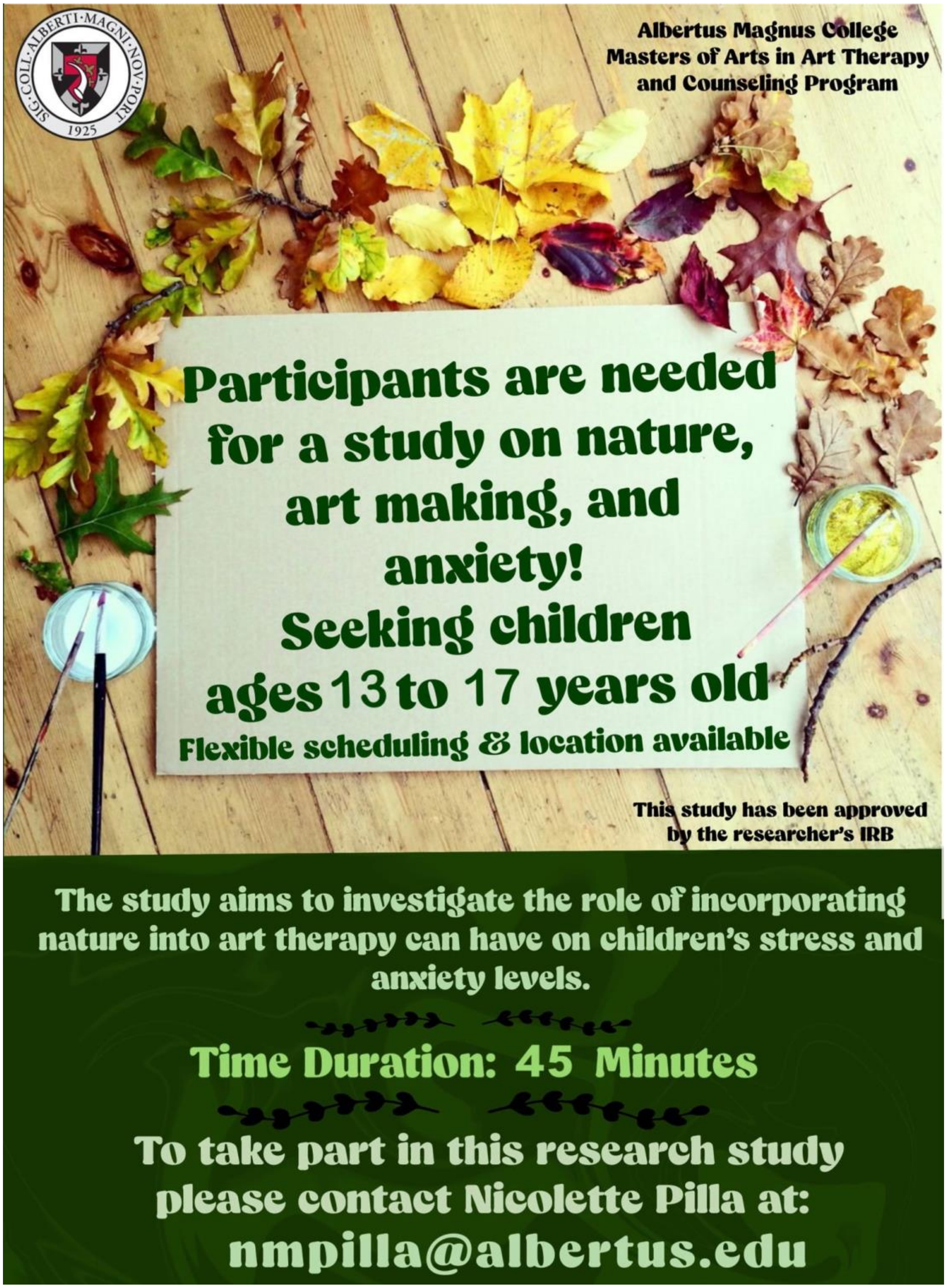
Figure 4

Dancing



Note: Artwork by a 16-year-old Caucasian male. Positive Affect increased by 2 points (from 24 to 26). Negative Affect decreased by 3 points (from 13 to 10).

Appendix A
Flyer



Albertus Magnus College
Masters of Arts in Art Therapy
and Counseling Program

Participants are needed for a study on nature, art making, and anxiety!

Seeking children ages 13 to 17 years old

Flexible scheduling & location available

This study has been approved by the researcher's IRB

The study aims to investigate the role of incorporating nature into art therapy can have on children's stress and anxiety levels.

Time Duration: 45 Minutes

To take part in this research study please contact Nicolette Pilla at:
nmpilla@albertus.edu

Appendix B
Image Art-Release Form

You are being asked to allow the investigator to photograph your (or your child's) artwork to be used for the research study. The researcher may use photographed images of your (or your child's) artwork for educational purposes but will only do so if you give permission to have your (or your child's) artwork photographed.

Please note that the photographs of your (or your child's) artwork will remain confidential. Your (or your child's) name will not be connected with your (or your child's) artwork, and photographs of the artwork will not include any identifying information. Photographs of the artwork will only be taken with your consent and used beyond this research for the purposes listed below.

Please indicate your agreement to have your (or your child's) artwork photographed without identifying information for the following purpose(se): (Please check all that apply)

- For educational and training purposes
- Presentation at a professional conference
- Publication in a professional journal
- I DO NOT agree to share images of my artwork beyond the research study for the above purposes

I hereby give consent, as noted above, for the use of my (child's) photographed artwork.

Name (print): ________________________________

Signature: ________________________________

Date: ________________________________

*You may revoke your permission at any time. Please keep in mind that if you decide to withdraw your consent to the use of photography of your (or your child's) art, it may be difficult or impossible to recover images that have already been publicly disseminated. If you wish to no longer give permission to share your images in the future, please contact the researcher of this study.

☐ I received a copy of this form for my records.

Appendix C
Informed Consent for Parent/Guardians

This study is being conducted as part of the requirements for the Master of Arts in Art Therapy and Counseling degree at Albertus Magnus College. This study aims to explore the therapeutic potential of embedding nature-based materials into art activities on children's (aged 13 to 17) positive and negative affect levels. During this study, your child will first complete informed assent and demographic forms, and a survey on positive and negative affect. Your child will then either be invited to participate in an art-making activity (with embedded nature materials) or engage in a nature-viewing activity. Your child will be randomly assigned to one of these two activities.

Please note that your child's art-making abilities are not a factor in this study. All information collected will be confidential. To maintain confidentiality, the artwork created and your child's answers on the surveys will be numbered, and your child's name will not be connected to the work in any way. You will be told in more detail at the end of this participation session about the research's purpose.

The researcher does not anticipate any major risks associated with participation in this study. Some potential risks may include frustration with art-making or possible negative feelings from nature-based materials, glue, Modge Podge, or questions on the survey. The benefits of participating include your child may enjoy the art activities.

Participation in this study is voluntary, and your child can withdraw at any point without penalty. This study has been approved by the Albertus Magnus College Institutional Review Board (IRB).

Please inform the researcher if your child has any known allergies to art materials.

If you have any questions or concerns about this research, you may contact the following individuals:

Investigator

Nicolette Pilla nmpilla@albertus.edu

Thesis Advisors

Julia Vicars, ATR-BC, LPC, CCTP jvicars@albertus.edu

Or:

Institutional Review Board Contact: IRB@albertus.edu

For Parent/Guardian:

I, ______________________________, hereby acknowledge that I am 18 years of age or older and have fully read and understood the details of the study described above. I voluntarily agree for my child_________________________________, to participate in this research.

Print Name of Parent/Guardian: _____________________________________

Signature of Parent/Guardian: _____________________________________

Date: ____________

□ I have received a copy of this form to keep for myself.

Appendix D
Teen Assent Form

Hi. My name is Nicolette Pilla. I'm a student at Albertus Magnus College, and I am doing a study for school. Right now, I'm trying to learn about how nature-connected art therapy can help with anxiety and stress. I would like to ask you to be in a study that involves art, nature, and answering some questions.

I will ask you to either make art or watch a video, both involve nature. It will take us about a half hour. We'll talk about how you feel at the end of the activity. There are no right or wrong answers. Everything you do will be private and I won't use your name when I talk about the study. By being in the study, you will help me understand if doing art with nature helps kids feel better when they're worried.

Your parent/guardian says it's okay for you to join. But if you don't want to, that's fine. You can stop anytime. If there is anything you don't understand you should let me know so I can explain it to you.

You can ask me questions about the study. If you have a question later that you don't think of now, you can email me or ask your parent/guardian to send me an email.

Do you have any questions for me now?

Would you like to be in this study?

For Teen:

I, ______________________________, understand that I am participating in the research study described above. I agree to take part and will do my best to contribute.

Print Name: _________________________________

Signature: ____ Date: ______________________

Appendix E
Demographic Form

1. How old are you? ____

2. What grade are you in at school? ____

3. Are you a boy or a girl, or do you prefer to describe yourself differently?

____

4. Where do you live:

Rural Area

Suburban Area

Urban Area

5. Describe what the street you live on is like:

____

6. I identify my race as (check all that apply):

- Asian
- Black/African American
- White
- American Indian
- Alaska Native
- Native Hawaiian
- Other Pacific Islander
- Prefer not to Answer
- Self-describe:____

7. What is your ethnicity?

- Hispanic/Latinx
- Non-Hispanic/Latinx
- Self-describe: ____

8. How often do you go play or spend time outside in a week?

- Rarely (0-1 days)
- Occasionally (2-3 days)
- Sometimes (4-5 days)
- Often (6-7 days)

9. What's your favorite thing to do outside?

- Playing with friends
- Going to the park
- Exploring nature
- Riding a bike
- Playing sports
- Other (please specify)____

10. How often do you spend time outdoors in nature with your family?

- Every day
- Several times a week
- Once a week
- Rarely
- Never

9. Do you want to spend more time in nature/outside?

- Yes
- No

10. What kind of art do you like the most?

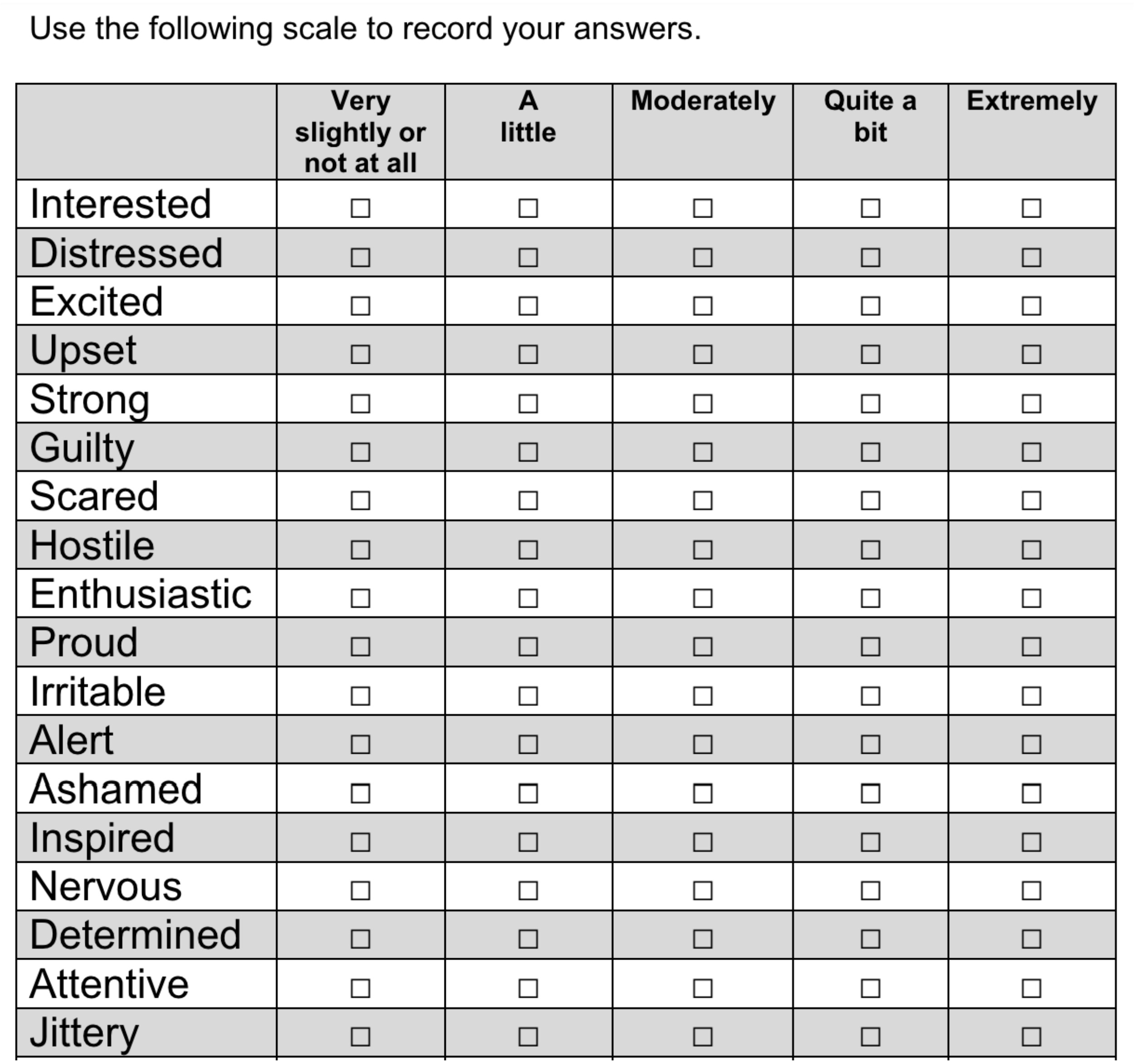
- Drawing
- Painting
- Sculpting
- Crafting
- Digital art
- Other (please specify)____

Appendix F
Script

Experimental Group	**Control Group**
“Hi there! Today, we're going to make some art using things we find in nature. Let's gather our materials - we have leaves, flowers, sticks, stones, and more. They're all here for you to create any kind of collage you’d like. You can make anything you want with these natural things. What comes to mind? Something you've seen before, or something totally new. You will have about 20-25 minutes to work on your art. Arrange your materials, take your time, and let your creativity flow. You can use glue, paper, and brushes if you want. I will give you time checks when we are halfway through and have five minutes left. Think about how these materials feel - their colors, textures, and shapes. How can you put them together to make something amazing? Remember, there's no right or wrong way to do this. When you're done, we'll check out what you've made. And you can tell me how this activity was for you. Do you have any questions before we begin?”	“Hi there. Today, we're going to look at some things we find in nature. Let's look at these nature images. When we're done, you can tell me how this activity was for you. Do you have any questions before we begin?”

Appendix G

Positive and Negative Affect Schedule



Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested	☐	☐	☐	☐	☐
Distressed	☐	☐	☐	☐	☐
Excited	☐	☐	☐	☐	☐
Upset	☐	☐	☐	☐	☐
Strong	☐	☐	☐	☐	☐
Guilty	☐	☐	☐	☐	☐
Scared	☐	☐	☐	☐	☐
Hostile	☐	☐	☐	☐	☐
Enthusiastic	☐	☐	☐	☐	☐
Proud	☐	☐	☐	☐	☐
Irritable	☐	☐	☐	☐	☐
Alert	☐	☐	☐	☐	☐
Ashamed	☐	☐	☐	☐	☐
Inspired	☐	☐	☐	☐	☐
Nervous	☐	☐	☐	☐	☐
Determined	☐	☐	☐	☐	☐
Attentive	☐	☐	☐	☐	☐
Jittery	☐	☐	☐	☐	☐

Appendix H
Debriefing Form

Thank you for participating in this study! This study aimed to investigate the potential therapeutic benefits of nature-based art activities on children’s positive and negative affect levels. Specifically, it sought to understand how creating art with nature-based materials might positively impact emotional well-being. Participants were randomly assigned into two groups: an experimental condition, in which they engaged in a nature-based art activity, and a control condition, in which they engaged in a nature-themed viewing activity. The surveys measure participants’ positive and negative affect levels. All participants' responses, art images, and data will be kept strictly confidential, and stored securely following the Albertus Magnus College’s Institutional Review Board (IRB) guidelines.

The risks of this study were minimal; however, if you or your child have experienced anything beyond a mild, transitory negative response, please feel free to discuss your feelings with the researcher.

If you need more support beyond that, please contact one of the community mental health services:

Your (or your child’s) participation aids in understanding the potential benefits of nature-connected art therapy for children's well-being. Your (or your child’s) involvement in this study is deeply appreciated. For those interested in receiving a summary of the study's findings, please provide your email address to the researcher Note that individual outcomes won't be disclosed; only aggregate results will be shared.

Thank you once again for your time and involvement in this research endeavor!